STEAM MECHANIC
QUALIFIED PERSON GUIDE

Introduction.
The PWC San Diego Utilities Department has determined that workers in the steam generation, transmission, and distribution trades are subject to significant and unique risks. This local standard requires that specific qualifications be established for all workers who operate and maintain installations, for example, employees who work in steam plants and steam distribution system maintenance and repair.

This guide, is closely aligned with the requirements of 29 CFR 1910.269, Electric Power Generation, Transmission and Distribution. It has been developed by the Utilities Department Safety ADHOC Team in response to a rising number of injuries and damage to facilities resulting from uncontrolled releases of steam during routine operations.

We recognize that personnel exposed to steam must understand it’s inherent hazards, recognize the varying degrees of exposure, and actively control them in order to safely accomplish their mission.

This guide is intended to provide an easy to use reference and comparison of mandatory and recommended criteria for development of skills and technical training. Our intent is to establish a level of expertise for our steam mechanics, and other support trades, consistent with the requirements of the Federal OSHA.

Definitions:
Qualified Person - A person knowledgeable in the construction, and/or operation of steam generation, transmission and distribution equipment, and the associated hazards.
Complete Working Knowledge - The employee must demonstrate his/her ability, to their supervisor or designated representative, that they understand the controls established by the section and can safely complete the work using the tools, procedures and safety precautions prescribed. Determination of these skills should be made using a written or verbal test, in conjunction with a functional test.

The following is a sample list of those trades who would be required to qualify under the standard and the recommended sections which must be successfully completed for each:

Boiler Plant Operator
- a/b/c/d/

Boiler Plant Equipment Mechanic
- a/b/c/d/

Pipefitter
- a/b/c/d/

Plumber
- a/b/c/d/e/g/h/i/k/l/n/o/p/q/s/t/u/v/w

Laborer
- a/b/c/d/e/g/h/i/k/l/n/o/p/q/s/t

Industrial Plant Equipment Mechanic
- a/b/c/g/l/p/q/s

Welder
- a/b/c/e/f/g/h/i/k/l/m/p/q/s/t

STEAM MECHANIC
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Section Explanations and Requirements

Reference: 29 CFR 1910.269

Section (a) General

Ref: 29 CFR 1910.269(a)
This section provides the requirements for use of the referenced standard, training the employees to a predetermined level of competence, and ensuring your employees are aware of existing conditions prior to beginning work. Elements within this section include:
(1) Application
(2) Training
(3) Existing Conditions

Method of Accomplishment: Develop and use lesson plans or Standard Operating Procedures. Training may also be contracted from outside sources, which include certified training facilities or Utility Companies. When possible or applicable, combine skills training with the elements from the 29CFR1910.269.

Level of Competence required: This section is required for all qualified persons as it explains the purpose and use of this standard.

Section (b) Medical Services and First Aid

Ref: 29 CFR 1910.269(b)
Supporting references:
OPNAV 5100.23D
Local Command Instructions

This section provides the requirements for the level of medical services which must be available and first aid training which must be provided. Elements within this section include:
(1) Cardiopulmonary resuscitation and first aid training
(2) First aid supplies
(3) First aid kits.

Method(s) of accomplishment: CPR and First Aid training must be conducted by certified instructors. Contact your local Command Training Office or Safety Manager.

Level of Competence required: All personnel working on or around steam generation, transmission and/or distribution systems must successfully complete CPR, first aid training and periodic refresher courses.

Section (c) Job Briefing
Ref: 29 CFR 1910.269(c)
Supporting references:
Local Command Instructions

This section provides the requirements for pre-job briefing, who can perform it, lockout/tagout procedures, special precautions, when the briefing must take place, and what information must be provided at the brief. Elements within this section include:
(1) Number of Briefings
(2) Extent of Briefing
(3) Working Alone

Method(s) of accomplishment: Develop and use lesson plans or Standard Operating Procedures. Training may also be contracted from outside sources, which include certified training facilities or Utility Companies. When possible or applicable, combine skills training with the elements from the 29CFR1910.269.

Level of Competence required: All employees must demonstrate a complete working knowledge of all elements of this section.

Section (d) Hazardous Energy Control (Lockout/Tagout)

Ref: 29 CFR 1910.269(d)

Supporting references:

29 CFR 1910.333(b)(2)
OPNAVINST 5100.23D, Chap 24
Local Command Instruction

This section provides the requirements for the Lockout/Tagout Program. It explains the employer's responsibilities, level of training required for the employee, hardware requirements, notification, application and removal of tags, and any additional requirements. Elements within this section include:

(1) Application
(2) General
(3) Protective Materials and Hardware
(4) Energy Isolation
(5) Notification
(6) Lockout/Tagout Application
(7) Release from Lockout/Tagout
(8) Additional Requirements

Method of Accomplishment: Develop and use lesson plans or Standard Operating Procedures. Training may also be contracted from outside sources, which include certified training facilities or Utility Companies. When possible or applicable, combine skills training with the elements from the 29CFR1910.269.

Level of Competence required: The employee must demonstrate a complete working knowledge of the procedures for All employees who work on or maintain any machine, equipment or system, where the unexpected energizing or restoration could occur and cause injury, must be certified competent under all elements of this section.

Section (e) Enclosed (Confined) Spaces
Ref: 29 CFR 1910.269(e)
Supporting references:
29 CFR 1910.146
OPNAVINST 5100.23D Chapter 27
Local Command Instruction

This section covers enclosed spaces which may be entered by employees. It explains what work practices are acceptable, the minimum level of employee training, availability of rescue equipment, space evaluation, test instruments, testing, ventilation and monitoring. Elements within this section include:
(1) Safe Work Practices
(2) Training
(3) Rescue Equipment
(4) Evaluation of Potential Hazards
(5) Removal of Covers
(6) Hazardous Atmosphere
(7) Attendants
(8) Calibration of Test Instruments
(9) Testing for Oxygen Deficiency
(10)Testing for Flammable Gases and Vapors
(11)Ventilation and Monitoring
(12)Specific Ventilation Requirements
(13)Air Supply
(14)Open Flames

Method(s) of accomplishment: Consult your activity Gas Free Engineer/Confined Space manager for methods of accomplishment.

Level of Competence required: The employee must demonstrate a complete working knowledge of the procedures for work in enclosed spaces and must be certified competent under all elements of this section. Individual activities may require additional certification.

Specific Guidance: Underground enclosed and confined spaces must be certified safe for entry by Gas Free Engineers/ Technicians before entering.

Section (f) Excavations

Ref: 29 CFR 1910.269(f)

Supporting references:

29 CFR 1926 Subpart P

This section directs all excavation operations to be in accordance with 29 CFR 1926, Subpart P. Subpart P provides guidance on trenching and excavations, soil classification, sloping, shoring, and other protective systems.

Method of Accomplishment: Develop and use lesson plans or Standard Operating Procedures. Training may also be contracted from outside sources, which include certified training facilities or Utility Companies. When possible or applicable, combine skills training with the elements from the 29CFR1910.269.

Level of Competence required: All employees whose work requires them to work in excavations must demonstrate a basic understanding of the requirements of this section.

Supplemental Guidance: Underground enclosed and confined spaces must be certified safe for entry by Gas Free Engineers/ Technicians before entering.

Section (g) Personal Protective Equipment

Ref: 29 CFR 1910.269(g)

Supporting references:

- 29 CFR 1910 Subpart I
- APPA Safety Manual
- OPNAVINST 5100.23D Chapter 20
- Local Command Instructions

This section directs Personal Protective Equipment (PPE) requirements to be in accordance with 29 CFR 1910 Subpart I, which provides guidance on workplace evaluation, PPE selection, distribution, and wear. Section (g) also provides guidance on the use of fall protection such as body belts, safety straps, harnesses and lifelines. Elements within this section include:

(1) General

(2) Fall Protection

Method of Accomplishment: Develop and use lesson plans or Standard Operating Procedures. Training may also be contracted from outside sources, which include certified training facilities or Utility Companies. When possible or applicable, combine skills training with the elements from the 29CFR1910.269.

Level of Competence required: The employee must demonstrate a complete working knowledge of the PPE required for the work performed, as well as the limitations, use, care and cleaning.

Specific Guidance: Basic outfitting for Steam Mechanics should offer protection against those hazards to which the employee is exposed. As a minimum, we recommend providing hard hat, durable leather safety shoes, high heat, leather insulating gloves, coveralls, hearing protection, faceshield, and safety glasses. In addition, provide any operation specific support PPE which may be required, such as: respirators, etc. Employers must train employees in the limitations, use, care, and testing requirements of all PPE used by the employee.

Section (h) Ladders, Platforms, Step Bolts, and Manhole Steps

Ref: 29 CFR 1910.269(h)

Supporting references:

29 CFR 1910 Subpart D

Local Command Instructions

This section directs all ladders platforms, step bolts and manhole steps to be in accordance with 29 CFR 1910 Subpart D, which provides guidance on evaluation, selection, use, and wear. This section also provides guidance on the use of non-conductive and conductive ladders. Elements within this section include:

(1) General

(2) Special Ladders and Platforms

(3) Conductive Ladders

Method(s) of accomplishment: Determine requirements based on local conditions. Confirm selection with local Safety Manager per giudance provided in OPNAVINST 5100.23D.

Level of Competence required: The employee must demonstrate a working knowledge of the ladders required for the work performed, as well as the limitations, safe use, care and cleaning.

Section (i) Hand and Portable Power Tools

Ref: 29 CFR 1910.269(I)

Supporting references:

29 CFR 1910. Subpart P

This section provides the requirements for electrical, hydraulic and pneumatic powered portable tools. It also covers portable and vehicle mounted generators. Elements within this section include:

(1) General
(2) Portable and vehicle-mounted generators
(3) Hydraulic and Pneumatic Tools

Method of Accomplishment: Develop and use lesson plans or Standard Operating Procedures. Training may also be contracted from outside sources, which include certified training facilities or Utility Companies. When possible or applicable, combine skills training with the elements from the 29CFR1910.269.

Level of Competence required: The employee must demonstrate a complete working knowledge of all hand and portable power tools required for the work performed, as well as the limitations, use, care and cleaning.

Section (k) Materials Handling and Storage

Ref: 29 CFR 1910.269(k)

Supporting references:

- 29 CFR 1910. Subpart N
- OPNAVINST 5100.23D Chapter 7
- Local Command Instruction

This section provides the requirements for materials handling and storage specifically in and around energized lines or exposed energized parts of equipment. Elements within this section include:

(1) General

(2) Materials Storage near Energized lines or Equipment

Method(s) of accomplishment: Contact your local Safety Manager or Hazardous Communication Manager to coordinate training. Develop and use lesson plans or Standard Operating Procedures. Training may also be contracted from outside sources, which include certified training facilities or Utility Companies. When possible or applicable, combine skills training with the elements from the 29CFR1910.269.

Level of Competence required: The employee must demonstrate a complete working knowledge of materials handling and storage procedures and precautions.

Section (p) Mechanical Equipment

Ref: 29 CFR 1910.269(p)

Supporting references:

Manufacturer’s Technical Manual

This section provides the requirements for the use and operation of vehicles and mechanical lifting equipment at the jobsite.

Elements within this section include:

(1) General Requirements
(2) Outriggers
(3) Applied Loads
(4) Operations near Energized Lines or Equipment

Method(s) of accomplishment: Contact your local Safety Manager or Weight Handling Program Coordinator to coordinate training. Develop and use lesson plans or Standard Operating Procedures. Training may also be contracted from outside sources, which include certified training facilities or Utility Companies. When possible or applicable, combine skills training with the elements from the 29CFR1910.269.

Level of Competence required: The employee must demonstrate a complete working knowledge of the procedures for the use, inspection, care, and operation of vehicles and mechanical lifting equipment.

Specific Guidance: Ensure vehicle certification(s) is/are current. Also ensure vechicle is rated and certified for the voltages present.

Section (t) Underground Mechanical Installations

Ref: 29 CFR 1910.269(t)

Supporting references:

29 CFR 1910. 269(e) Enclosed (Confined) spaces

This section provides the requirements for work in underground mechanical installations. Elements within this section include:

(1) Access
(2) Lowering Equipment into Manholes
(3) Attendants for Manholes
(4) Duct Rods
(5) Multiple Cables
(6) Moving Cables
(7) Defective Cables
(8) Sheath Continuity

Method of Accomplishment: Develop and use lesson plans or Standard Operating Procedures. Training may also be contracted from outside sources, which include certified training facilities or Utility Companies. When possible or applicable, combine skills training with the elements from the 29CFR1910.269. Additional guidance is also provided in sections (e), (f), (t), and (i).

Level of Competence required: The employee must demonstrate a complete working knowledge of the procedures for working in underground mechanical installations.

Section (v) Power Generation

Ref: 29 CFR 1910.269(v)

Supporting references:

APPA Safety Manual Section 9

This section provides requirements and related work practices for power generating plants. Elements within this section include:

(1) Water or Steam Spaces
(2) Chemical Cleaning of Boilers and Pressure Vessels
(3) Chlorine Systems
(4) Boilers
(5)Turbine Generators
(6)Coal and Ash Handling

Method of Accomplishment: Develop and use lesson plans or Standard Operating Procedures. Training may also be contracted from outside sources, which include certified training facilities or Utility Companies. When possible or applicable, combine skills training with the elements from the 29CFR1910.269.

Level of Competence required: The employee must demonstrate a complete working knowledge of the requirements and related work practices for power generating plants.

System configuration
- System layout. Employee should be familiar with the layout and workings of the local steam and condensate distribution system
- Components
  - traps
  - Strainers
  - Mud legs
  - Equalizing Bypass valves
  - Expansion loops
  - Expansion Joints

System start up
- procedures
- hazards
  - Condensate induced water hammer
  - Burns